

Density and temperature sensor For real-time monitoring of gases Model DTG-30

WIKA data sheet SP 89.03



MesoScale®

Applications

- Fuel gas combustion control (integration into Wobbe index and BTU analysis)
- Gas quality control
- Determination of molecular weight, binary gas concentrations and specific gravity
- Improved flow measurement

Special features

- Compact design for easy integration
- Innovative real-time and repeatable measurement
- Low maintenance and robust design
- Support decarbonisation goals



**Density and temperature sensor,
with circular connector, model DTG-30**

Description

The model DTG-30 measures continuously and in real time the density and temperature of gases. This allows gas monitoring in combustion processes, quality control of gases and determination of concentrations in gas mixtures.

Compact design for easy integration

The DTG-30 has a compact form factor – less than 10 cm in height. It can be mounted in-line or on a sample line with minimal space and even in tight locations.

Innovative real-time and repeatable measurement

The DTG-30 is based on the innovative MesoScale® technology. This microresonator-based technology from the microsystems industry enables continuous in-line measurement of gas density and temperature. The patented design allows fast response time and high repeatability while achieving strong accuracy over all the calibration range. The DTG-30 outputs measured values at 1 Hz, providing a virtually real-time stream of data.

Low-maintenance and robust design

The DTG-30 is engineered for durability and stability. Its wetted parts are made of 316L stainless steel, which resists corrosion and wear in demanding media. With no moving parts and stable calibration over time, the sensor requires no regular field calibration. It features self-diagnostic capabilities to monitor its own status, ensuring reliable performance. The DTG-30 is approved for use in hazardous areas according to ATEX, IECEx and FM.

Support decarbonisation goals

The DTG-30 supports the commitment to decarbonisation by providing accurate, real-time data for process optimisation and emission reduction. It enables hydrogen blending monitoring and combustion optimisation, helping customers to reduce CO₂ emissions and meet sustainability targets.

Specifications

Accuracy specifications	
Accuracy	
Density	±0.015 kg/m ³ (for 10 ... 70 °C [50 ... 158 °F]) ±0.030 kg/m ³ (for -20 ... +65 °C [-4 ... +149 °F])
Temperature	±0.5 °C
Non-repeatability	
Density	0.0025 kg/m ³
Temperature	0.1 °C
Measuring rate	1/s

Measuring range	
Density	■ 0.3 ... 3 kg/m³ ■ 1.5 ... 8 kg/m³ ■ 2.5 ... 10 kg/m³
Temperature	■ 10 ... 70 °C [50 ... 158 °F] (not available for 2.5 ... 10 kg/m³) ■ -20 ... +65 °C [-4 ... +149 °F] (not available for 0.3 ... 3 kg/m³)

→ Other temperatures on request.

Process connection	
Thread size	■ 1/8 NPT ■ 1/4 NPT → Base plate (flow through)
Additional pressure connection	■ G 1/4 ■ 1/4 NPT → Extended base plate (flow through)

Output signal	
Signal type	
Analogue	4 ... 20 mA
Digital	Modbus® RTU (RS-485)
Voltage supply	
Auxiliary power	DC 12 ... 24 V
Power consumption	< 600 mW
Dynamic behaviour	
Switch-on time	≤ 3 s

Electrical connection	
Connection type	■ DIN EN 175301-803 C angular connector, 4-pin ■ Circular connector M12 x 1, IEC -61076-2-101, 5-pin ■ Circular connector DBPLU 104 Z066-130VGF, 8-pin, 2 m [6.56 ft] cable length ■ Circular connector DBPLU 104 Z066-130VGF, 8-pin, 5 m [16.40 ft] cable length ■ Circular connector DBPLU 104 Z066-130VGF, 8-pin, 10 m [32.81 ft] cable length
Ingress protection (IP code) per IEC 60529	IP65 → The stated IP codes only apply when plugged in using mating connectors that have the appropriate IP code.

Pin assignment

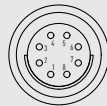
Angular connector, 4-pin	Pin	Name	Signal type: RS-485 ¹⁾	Signal type: 4 ... 20 mA
	1	PVIN+	Power supply terminal	Power supply terminal
	2	A / A1+	RS-485-A (N1)	4 ... 20 mA, temperature (A1)
	3	B / A2+	RS-485-B (N2)	4 ... 20 mA, density (A2)
	4/GDS	0 V	Ground	Ground

1) Outputs available for RS-485: temperature, density, temperature-compensated density at 0 °C [32 °F]

Circular connector M12 x 1, 5-pin	Pin	Name	Signal type: RS-485 ¹⁾
	1	0 V	Ground
	2	PVIN+	Power supply terminal
	3	0 V	Ground
	4	A	RS-485-A (N1)
	5	B	RS-485-B (N2)

1) Outputs available for RS-485: temperature, density, temperature-compensated density at 0 °C [32 °F]

Circular connector M12 x 1, 5-pin	Pin	Name	Signal type: 4 ... 20 mA
	1	PVIN+	Power supply terminal
	2	A1+	4 ... 20 mA, temperature (A1)
	3	A2+	4 ... 20 mA, density (A2)
	4	A3+	4 ... 20 mA, temperature-compensated density at 0 °C [32 °F] (A3)
	5	0 V	Ground

Circular connector, 8-pin	Pin	Name	Signal type: RS-485 ¹⁾	Signal type: 4 ... 20 mA	Wiring
	1	A	RS-485-A (N1)	Must be disconnected	Purple
	2	A1+	Not connected ²⁾	4 ... 20 mA, temperature (A1)	Orange
	3	0 V	Ground	Ground	Black
	4	PVIN+	Power supply terminal	Power supply terminal	Red
	5	0 V	Ground	Ground	Brown
	6	A3+	Not connected ²⁾	4 ... 20 mA, temperature-compensated density at 0 °C [32 °F] (A3)	Green
	7	B	RS-485-B (N2)	Must be disconnected	Blue
	8	A2+	Not connected ²⁾	4 ... 20 mA, density (A2)	Yellow

1) Outputs available for RS-485: temperature, density, temperature-compensated density at 0 °C [32 °F]

2) Can be connected to ground

Material	
Material (wetted)	Stainless steel 316L
Material (in contact with the environment)	
Seal	■ FPM/FKM ■ FFKM

Operating conditions		
Medium temperature limit	■ -40 ... +105 °C [-40 ... +221 °F] ■ -40 ... +85 °C [-40 ... +185 °F] for instruments with explosion protection	
Ambient temperature limit	■ -40 ... +105 °C [-40 ... +221 °F] ■ -40 ... +85 °C [-40 ... +185 °F] for instruments with explosion protection	
Max. operating pressure	20 bar [290 psi]	
Flow velocity	< 10 m/s recommended	
Recommended mounting position ¹⁾	→ Observe the flow direction indicated on the sensor → Inserted in a straight section of the gas line or in a bypass line	
Vibration resistance	2g per IEC 60068-2-6	
	0.1 ... 5.8g per IEC 60068-2-64	
Shock resistance per IEC 60068-2-27	40g	
EMC tests	In addition, observe the installation instructions of the operating instructions	
Immunity per IEC 61000-4-3	At 80 MHz to 1.4 GHz	10 V/m
	At 1.4 GHz to 6 GHz	3 V/m
Burst per IEC 61000-4-4	1 kV	
Surge immunity per IEC 61000-4-5	2 kV/1kV common mode	
ESD per IEC 61000-4-2	4 kV/8 kV, contact/air	
High-frequency fields per IEC 61000-4-6	3 V	

1) Other factors such as the presence of particles, humidity, vapour, contamination, turbulence etc. must be taken into account to determine the best mounting position. If you have any questions, please contact our application consultant.

Approvals

Logo	Description	Region
	EU declaration of conformity	European Union
	EMC directive	
	EN 61326 emission (group 1, class B) and immunity (industrial application)	
	RoHS directive	

Optional approvals

Logo	Description	Country
	EU declaration of conformity	European Union
	ATEX directive Hazardous areas - Ex ia Zone 0 gas II 1G Ex ia IIC T4 Ga	
	IECEX Hazardous areas - Ex ia Zone 0 gas Ex ia IIC T4 Ga	International
	FM Hazardous areas CL I, Div I, GPS A, B, C, D T4	USA and Canada

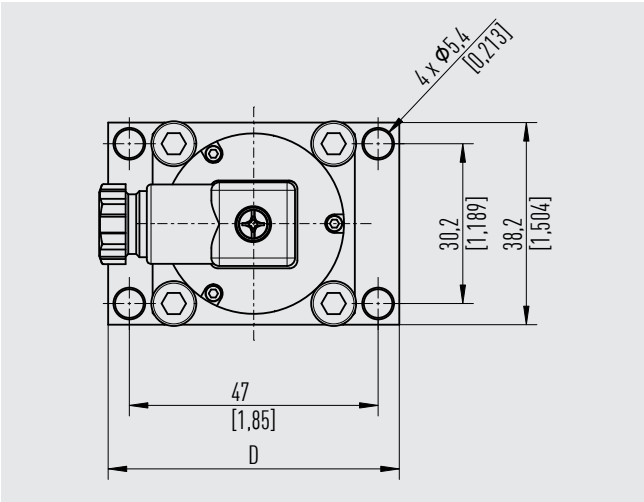
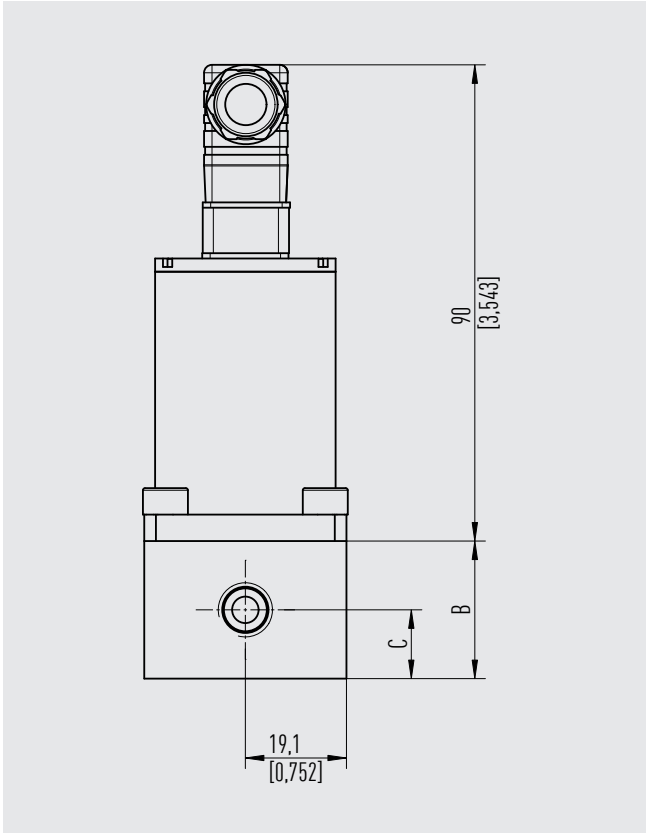
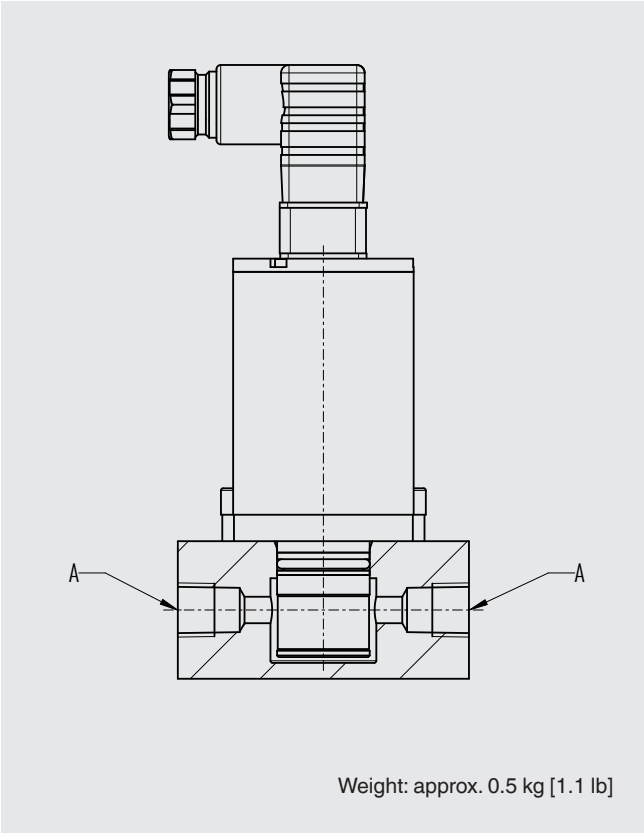
Patents, property rights

Patent number	Description
EP 3.353.526 US 10.481.060	Density sensor and density sensor manufacturing method

→ For approvals and certificates, see website

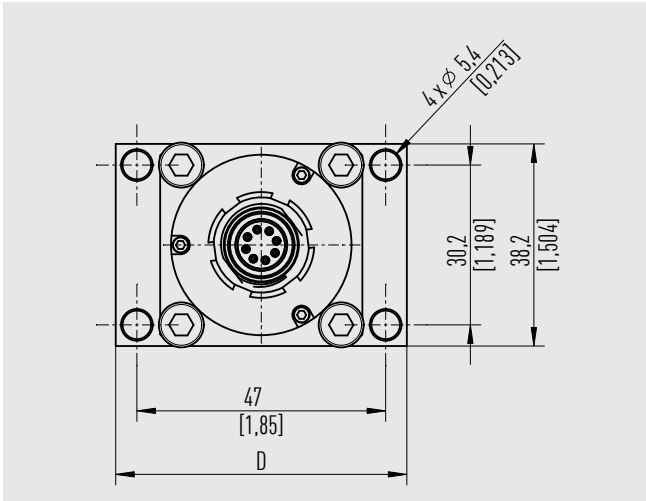
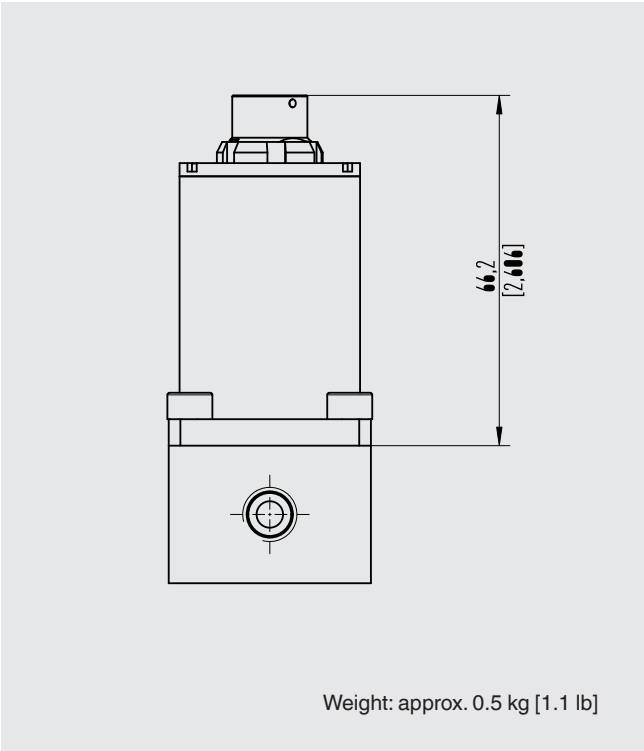
Dimensions in mm [in]

Mounted on NPT base plate with (DIN EN 175301-803 C angular connector, 4-pin)

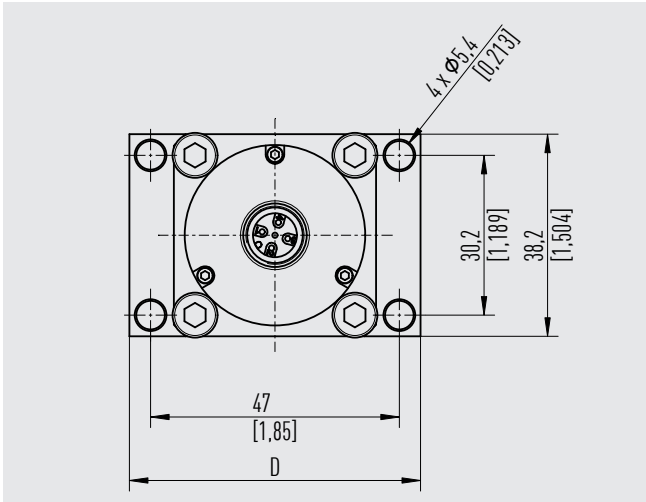
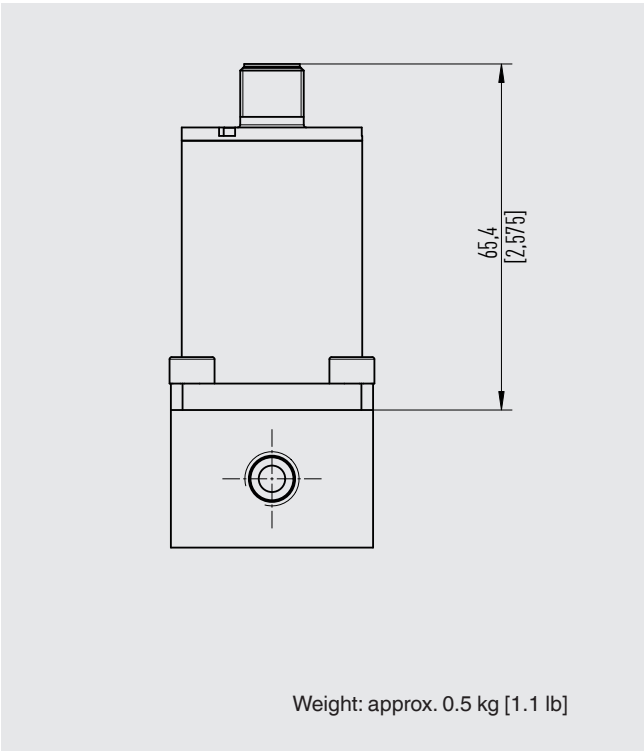


Dimensions			
A	B	C	D
1/8 NPT	26 mm	13 mm	55 mm
1/4 NPT	28 mm	14 mm	65 mm
1/8 NPT	1,024 in	0,512 in	2,165 in
1/4 NPT	1,102 in	0,551 in	2,559 in

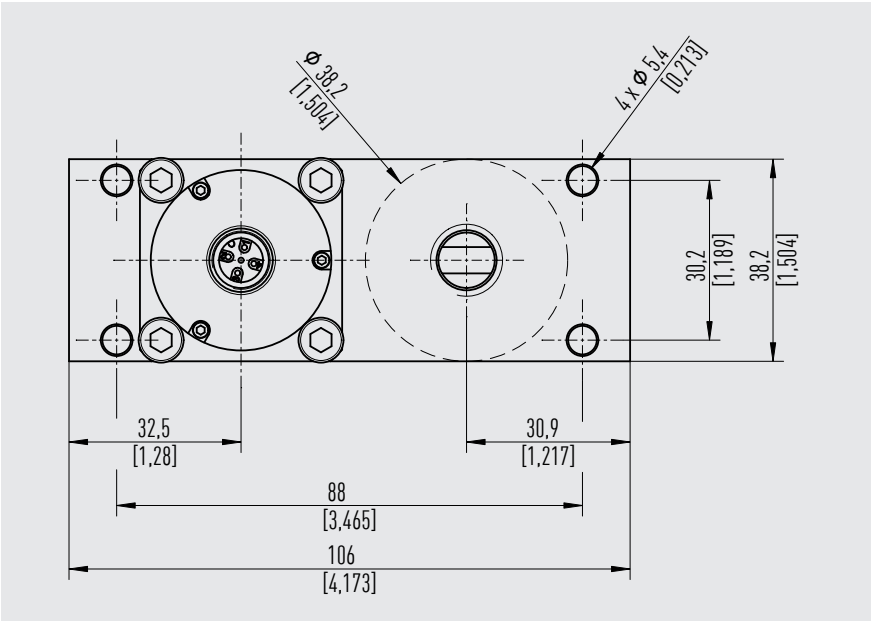
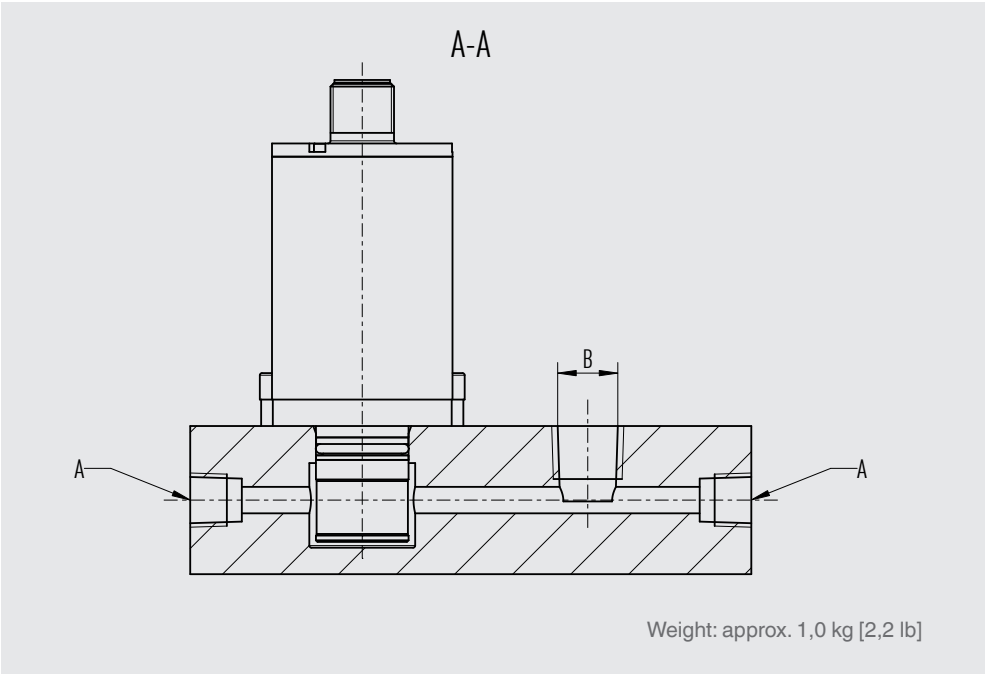
Mounted on NPT base plate (DBPLU 104 Z066-130VGF circular connector, 8-pin)



Mounted on NPT base plate (IEC-61076-2-101 circular connector M12 x 1, 5-pin)



Mounted on NPT base plate with additional pressure connection (IEC-61076-2-101 circular connector M12 x 1, 5-pin)



Abmessungen			
A	B	C	D
½ NPT	26 mm	13 mm	55 mm
¼ NPT	28 mm	14 mm	65 mm
½ NPT	1,024 in	0,512 in	2,165 in
¼ NPT	1,102 in	0,551 in	2,559 in

Accessories and spare parts

Model	Description
Cable	
For circular connector M12 x 1, IEC-61076-2-101, 5-pin, analog	■ 2 m [6.56 ft] ■ 5 m [16.40 ft] ■ 10 m [32.81 ft] ■ 2 m [6.56 ft], right angle ■ 5 m [16.40 ft], right angle ■ 10 m [32.81 ft], right angle
For circular connector M12 x 1, IEC-61076-2-101, 5-pin, digital	■ 2 m [6.56 ft] ■ 5 m [16.40 ft] ■ 10 m [32.81 ft] ■ 2 m [6.56 ft], right angle ■ 5 m [16.40 ft], right angle ■ 10 m [32.81 ft], right angle
For circular connector, DBPLU 104 Z066-130VGF, 8-pin	■ 2 m [6.56 ft] ■ 5 m [16.40 ft] ■ 10 m [32.81 ft]
BSU-30	Smart measuring bridge
	→ For multiple sensor inputs and calculation of specific parameters
Ex protection	→ For a detailed description of the appropriate Ex protection, see the additional operating instructions of the product.
Intrinsically safe isolated barrier	For the power supply, applications in hazardous areas.
	For 4 ... 20mA analog outputs, applications in hazardous areas
	For RS-485 digital outputs, applications in hazardous areas

Ordering information

Model / Output Signal / Process connection / Electrical connection / Seal / Measuring range temperature / Measuring range density / Accuracy density / Cable length / Approvals

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The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



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